

Appn. No. 10/717,054
Amdt. dated January 24, 2005
Reply to Office Action of September 22, 2004

REMARKS/ARGUMENTS

Reconsideration of the present application, as amended, is respectfully requested.

The September 22, 2004 Office Action and the Examiner's comments have been carefully considered. In response, the specification and drawings are amended, new claims are added and remarks are set forth below in a sincere effort to place the present application in form for allowance. The amendments are supported by the application as originally filed. Therefore, no new matter is added.

ALLOWABLE SUBJECT MATTER

The Examiner's indication that claims 17 and 18, all of the claims currently pending in the application, are allowed is acknowledged and appreciated.

OATH/DECLARATION

In the Office Action the Examiner states that the oath or declaration is defective, contending that it is not in compliance with 37 CFR 1.67(a) because the declaration is not dated. In response, an interview was conducted with Examiner Culbreth on

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September 28, 2004 wherein this issue was discussed. Applicants' attorney, Robert Michal, pointed out that under MPEP § 602.05, a new oath/declaration is not necessary because there is no requirement that the declaration be dated. This was acknowledged by the Examiner in the Interview Summary dated September 28, 2004.

In view of the foregoing, reconsideration and withdrawal of the Examiner's requirement for a new oath or declaration are respectfully requested.

PRIORITY

In the Office Action the Examiner states that a claim for priority under 35 USC 119 cannot be based on Applicants' corresponding Japanese application which was filed in Japan on December 16, 1997 because the Examiner contends that the United States application was filed more than twelve, (12) months after the filing of the Japanese application. In response, an interview was conducted with Examiner Culbreth on September 28, 2004 wherein it was pointed out that the corresponding Japanese priority application was filed on December 16, 1997 and the parent application from which the present application claims the benefit under 35 USC 120 was filed on December 9, 1998, which is less than one (1) year from the filing of the corresponding Japanese

priority application. Therefore, the claim for priority under 35 USC 119 is proper. This was pointed out to the Examiner during the interview and the Examiner acknowledged the proper claim for priority under 35 USC 119 in the Interview Summary dated September 28, 2004. In view of the foregoing, acknowledgment of the properness of the priority claim under 35 USC 119 is respectfully requested.

DRAWINGS

In the Office Action, the drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include certain reference signs mentioned in the description. In response, the drawings and specification are amended to address each of the points raised by the Examiner in the objection to the drawings, with the exception of points r and ab.

With regard to point r, Applicants respectfully state that the specification as originally filed (page 136, line 34 - page 137, line 18) indicates different points between the fifteenth embodiment and the sixteenth embodiment, and is not a description regarding Fig. 58. The collision sensor "55" is shown in Fig. 59 (see "hereinafter referred to" at page 137, line 17).

With regard to point ab, Applicants respectfully state that the reference mark "im" is shown at step 8603 in Fig. 80.

In view of the amendments to the specification and drawings, and the foregoing remarks, reconsideration and withdrawal of the objection to the drawings are respectfully requested.

In the Office Action the drawings are also objected to because of certain informalities indicated in item #4 beginning at the bottom of page 4 of the Office Action. In response, the specification and drawings are amended to address each of the points raised by the Examiner. In view of the amendment of specification and drawings, reconsideration and withdrawal of the objection to the drawings as set forth in item #4 of the Office Action are respectfully requested.

SPECIFICATION

In the Office Action the Abstract of the Disclosure is objected to because of certain informalities as indicated in item #5 at the middle of page 7 of the Office Action.

In response, the Abstract of the Disclosure is amended in a sincere effort to overcome the objections raised by the Examiner and to be in compliance with 37 CFR 1.72(b) (not more than 150 words). In view of the amendment of Abstract of the Disclosure,

reconsideration and withdrawal of the objection to the Abstract of the Disclosure are respectfully requested.

In item #6 on page 7 of the Office Action the Examiner states that the lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors and requests Applicants' cooperation in correcting any errors of which Applicants may become aware. In response, Applicants respectfully inform the Examiner that errors of which Applicants have become aware in the written description and drawings have been corrected.

In item #7 beginning at the bottom of page 7 of the Office Action the Examiner objects to the disclosure because of certain informalities. In response, the disclosure has been amended in accordance with many of the requests set forth by the Examiner. However, with respect to certain points raised by the Examiner which are addressed separately below, it was determined that changes to the specification are not required.

With regard to point e, Applicants have reviewed the pages and lines indicated by the Examiner but no dash ("--") is present. The mark may be a stray photocopy mark. Since the dash referenced by the Examiner does not appear on Applicants' copy of the application, Applicants authorize the Examiner to amend page 8,

line 29, page 25, line 29 and page 31, line 29 to remove the "dash." With regard to point n, Applicants respectfully state that the description of the "fourteenth embodiment" is shown on page 45, line 25.

With regard to point w, Applicants respectfully state that the value "200" indicates an example of a predetermined value (i.e., a threshold value) of the time j (see page 82, lines 1-2). Therefore, there is no unit corresponding to the value "200."

With regard to point y, Applicants respectfully state that if the degree of danger is zero, normal rotative driving and reverse rotative driving of the DC motor 10 may not be carried out. If the degree of danger is low, normal rotative driving and reverse rotative driving of the DC motor 10 are effected at a rate of 10 times per second (page 102, lines 18 - 21). FIGS. 38A, 38C and 38E are views showing how the DC motor 10 is driven when the degree of danger is determined to be "low" at the danger degree determining device 43 (i.e., the degree of danger is not zero but low).

With regard to points am, an and ao, Applicants respectfully state that the arbitrary value corresponding to each of the coefficients K1, K2, a1, a2, b1 and b2 is provided to the MPU 14 beforehand.

The coefficients K1 and K2 represent correction values for bringing forward and slowing down predetermined actuation times of the airbag 57 and the pretensioner 58 (e.g. the coefficient K1 is set to 8s/rad and the coefficient k2 is set to 3ms).

For example, if the predetermined value T2 of the actuation times of the airbag 57 and the pretensioner 58 when the vehicle collides against a wall at a speed of 35 mph is set to 20ms, the coefficient K1 is set to 8s/rad, the coefficient k2 is set to 3ms, and the rotation speed v of the reel shaft 3 in the event of a collision of the vehicle is 24 rad/s, the correction value T1 for the actuation time of the airbag 57 and the pretensioner 58 is 2ms according to the formula (5). The value T of the actuation time of the airbag 57 and the pretensioner 58 is 18ms by the use of formula (7) (i.e., "T = T2 - T1 ... (7)").

On the other hand, if the predetermined value T2 when the vehicle collides against a wall at a speed of 16 mph is set to 40ms, the coefficient K1 is set to 8s/rad, the coefficient k2 is set to 3ms, and the rotation speed v of the reel shaft 3 in the event of the collision of the vehicle is 8 rad/s, the correction value T1 for the actuation time of the airbag 57 and the pretensioner 58 is 0ms according to formula (5). The value T of

the actuation time of the airbag 57 and the pretensioner 58 is 40ms by use of formula (7) (i.e., "T = T₂ - T₁ ... (7)").

Thus, the value T of the actuation time of the airbag 57 and the pretensioner 58 is changed based upon the coefficients K₁ and K₂ and the rotation speed v of the reel shaft 3.

The coefficients a₁ and a₂ represent correction values for increasing and decreasing predetermined values of the expansion pressure of the airbag 57 and the seatbelt retracting force of the pretensioner 58 (e.g. the coefficient a₁ is set to 8s/rad and the coefficient a₂ is set to 9kpa).

For example, if the predetermined value P₂ of the expansion pressure of the airbag 57 when the vehicle collides against a wall at a speed of 35 mph is set to 45kpa, the coefficient a₁ is set to 8s/rad, the coefficient a₂ is set to 9kpa, and the rotation speed v of the reel shaft 3 in the event of a collision of the vehicle is 24 rad/s, the correction value P₁ for the expansion pressure of the airbag 57 is 6kpa according to formula (6). The value P of the expansion pressure of the airbag 57 is 39kpa by use of formula (8) (i.e., "P = P₂ - P₁ ... (8)").

On the other hand, if the predetermined value P₂ of the expansion pressure of the airbag 57 when the vehicle collides against a wall at a speed of 16 mph is set to 30kpa, the

coefficient a_1 is set to 8s/rad, the coefficient a_2 is set to 9kpa, and the rotation speed v of the reel shaft 3 in the event of a collision of the vehicle is 8 rad/s, the correction value P_1 for the expansion pressure of the airbag 57 is 0kpa according to formula (6). The value P of the expansion pressure of airbag 57 is 30kpa by use of formula (8) (i.e., " $P = P_2 - P_1 \dots (8)$ ").

Thus, the value P of the expansion pressure of the airbag 57 is changed based upon the coefficients a_1 and a_2 and the rotation speed v of the reel shaft 3. The coefficients b_1 and b_2 represent correction values for increasing and decreasing the predetermined value of the driving force of the reel shaft 3 (e.g. the coefficient b_1 is set to 1/24 s/rad and the coefficient b_2 is set to 60N).

For example, if the predetermined value F_2 of the driving force of the reel shaft 3 when the vehicle collides against a wall at a speed of 35 mph is set to 200N, the coefficient b_1 is set to 1/24 s/rad, the coefficient b_2 is set to 60N, and the rotation speed v of the reel shaft 3 in the event of a collision of the vehicle is 24 rad/s, the correction value F_1 of the driving force of the reel shaft 3 is 0N according to formula (9). The value F of the driving force of the reel shaft 3 is 200N by use of formula (10) (i.e., " $F = F_2 - F_1 \dots (10)$ ").

On the other hand, if the predetermined value F2 of the driving force of the reel shaft 3 when the vehicle collides against a wall at a speed of 16 mph is set to 150N, the coefficient b1 is set to 1/24 s/rad, the coefficient b2 is set to 60N, and the rotation speed v of the reel shaft 3 in the event of a collision of the vehicle is 8 rad/s, the correction value F1 of the driving force of the reel shaft 3 is 40N according to formula (9). The value F of the driving force of the reel shaft 3 is 110N by use of formula (10) (i.e., "F = F2 - F1 ... (10)").

Thus, the value F of the driving force of the reel shaft 3 is changed based upon the coefficients b1 and b2 and the rotation speed v of the reel shaft 3.

With regard to point ap, Applicants respectfully state that there is a description of "EA function" in the specification (page 6, line 28 to page 7, line 17). That is, "EA function" means a function for causing the reel shaft to rotate in the direction of protracting the seatbelt when a tension in excess of a prescribed value is applied to the seatbelt immediately after a collision of the automotive vehicle, so as to control the tension to or below the prescribed value.

With regard to point as, Applicants respectfully state that a control signal which commands rotation of the DC motor 210 in the

seatbelt protracting direction at a high rotational speed, i.e. a control signal which causes a change from a low degree of rotational acceleration to a desired high degree of rotational acceleration, is delivered to the DC motor driver 11 at a step S7201. More specifically, the MPU 14 gradually increases the duty factor (ratio) of the control signal, and responsive to this control signal, the DC motor driver 11 changes the rotational acceleration of the DC motor 10 from a low degree of rotational acceleration to a high degree of rotational acceleration in the seatbelt protracting direction (page 155, line 25 - page 156, line 3). Thus, the MPU 14 delivers the control signal to the DC motor driver 11 and gradually increases the duty factor (ratio) of the control signal. Therefore, it is easy for the MPU 14 to increase the duty factor (ratio) of the control signal at intervals of, for example, 1%.

With regard to point at, Applicants respectfully state that a control signal which commands rotation of the DC motor 210 in the seatbelt protracting direction at a low speed, i.e. a control signal which causes a change from a high degree of rotational acceleration to a desired low degree of rotational acceleration, is delivered to the DC motor driver 11 at a step S7401. More specifically, the MPU 14 gradually decreases the duty factor

(ratio) of the control signal, and responsive to this control signal, the DC motor driver 11 changes the rotational acceleration of the DC motor 10 from a high degree of rotational acceleration to a low degree of rotational acceleration in the seatbelt protracting direction (page 158, lines 17 - 31). Thus, the MPU 14 delivers the control signal to the DC motor driver 11 and gradually decreases the duty factor (ratio) of the control signal. Therefore, it is easy for the MPU 14 to decrease the duty factor (ratio) of the control signal at intervals of e.g. 1%.

With regard to point ax, Applicants respectfully state that the temperature coefficient "r" is used for correcting the temperature characteristics of the DC motor 10 and a power transfer system in the vicinity of the DC motor 10 such as gears, and it aims at reducing the change of these characteristics with temperature. The temperature coefficient "r" is set to the MPU 14 beforehand (e.g. $r = 1/t \times 298$ (t : absolute temperature)). A value of the temperature coefficient "r" becomes small when the DC motor 10 and the power transfer system have high temperatures; that is, the temperature coefficient "r" becomes large when the DC motor 10 and the power transfer system have low temperatures.

With regard to point ay, Applicants respectfully state that a comma is not present on Applicants' copy of the application. If

the comma is present in the Patent Office copy of the application at page 197, line 29, Applicants authorize the Examiner to amend page 197, line 29 by deleting the comma.

In view of the foregoing amendments and comments, reconsideration and withdrawal of the objection to the disclosure are respectfully requested.

SUBSTITUTE SPECIFICATION

In the Office Action the Examiner indicates that a substitute specification is required because the number of changes to correct the informalities may result in confusion at the time of printing the patent should the application issue. In response, Applicants conducted an interview with Examiner Culbreth stating that, due to the length of the application, the preparation of a substitute specification would be onerous. During the interview the Examiner stated that a substitute specification would not be required and that he would consider a normal amendment to correct the specification if the normal amendment actually requires less effort on the part of the Applicants and the Examiner. A normal amendment of the specification has been provided, as Applicants have determined that this requires less effort on the part of the Applicants and the Examiner. The Examiner's statement regarding

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the lack of requirement for a substitute specification is memorialized in the September 28, 2004 Interview Summary.

NEW CLAIMS

New claims 30-35 are added to the present application. New claims 30-35 correspond to original claims 16-21. The addition of new claims to the present application was discussed with Examiner Culbreth during interviews on November 16, 2004, November 17, November 19, 2004 and December 3, 2004. During the interviews the Examiner stated that even in view of the fact that an *Ex-Parte Quayle* action has been issued, the Examiner would consider the addition of new claims if the new claims are directed to the same embodiment that was examined when the *Ex-Parte Quayle* action was issued, and that the filing of a Request for Continued Examination (RCE) is the proper course of action to add the new claims. The Examiner also indicated that since claim 17 as examined was a combination of claims 16 and 17 from the original application, that an RCE with original claim 16 should be acceptable.

New claims 30-35 correspond to original claims 16-21 which are directed to the same embodiment that was examined by the Examiner when the *Ex-Parte Quayle* action was issued. Therefore, the addition of claims 30-35 is proper.

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It is respectfully submitted that no additional fees are due for the presentation of claims 30-35 since these claims include one (1) independent claim and six (6) total claims. However, if any additional fees are due, please charge our Deposit Account No. 06-1378 for such sum.

CLAIMS

Claims 17 and 18 are cancelled in view of the presentation of claims 31 and 32 which correspond to claims 17 and 18 in dependent form.

* * * * *

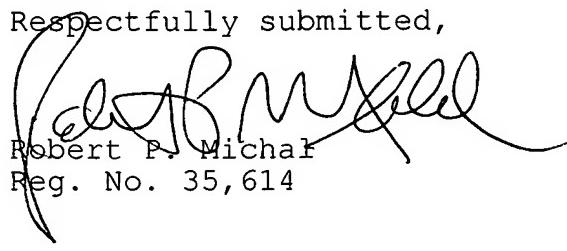
If the Examiner disagrees with any of the foregoing, the Examiner is respectfully requested to point out where there is support for a contrary view.

Entry of this Amendment and the passing of this application to issue are respectfully solicited.

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If the Examiner has any comments, questions, objections or recommendations, the Examiner is invited to telephone the undersigned at the telephone number given below for prompt action.

Respectfully submitted,



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RPM:ms

Encls.: Annotated sheets showing changes to Figs. 1, 5, 8, 13, 14, 15, 16, 17, 18, 22, 26, 28, 31, 38, 46, 66, 67, 68, 69 and 75

Replacement sheets for Figs. 1, 5, 8, 13, 14, 15, 16, 17, 18, 22, 26, 28, 31, 38, 46, 66, 67, 68, 69 and 75

Petition for Extension of Time

Petition For Extension of Time

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AMENDMENTS TO THE DRAWINGS:

Attached hereto are annotated sheets showing change to Figs. 1, 5, 8, 13, 14, 15, 16, 17, 18, 22, 26, 28, 31, 38, 46, 66, 67, 68, 69 and 75 and replacement sheets for Figs. 1, 5, 8, 13, 14, 15, 16, 17, 18, 22, 26, 28, 31, 38, 46, 66, 67, 68, 69 and 75. No new matter is added and these amendments are supported by the specification as originally filed.

Attachments: Annotated sheets showing changes to Figs. 1, 5, 8, 13, 14, 15, 16, 17, 18, 22, 26, 28, 31, 38, 46, 66, 67, 68, 69 and 75

Replacement sheets for Figs. 1, 5, 8, 13, 14, 15, 16, 17, 18, 22, 26, 28, 31, 38, 46, 66, 67, 68, 69 and 75



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FIG.1

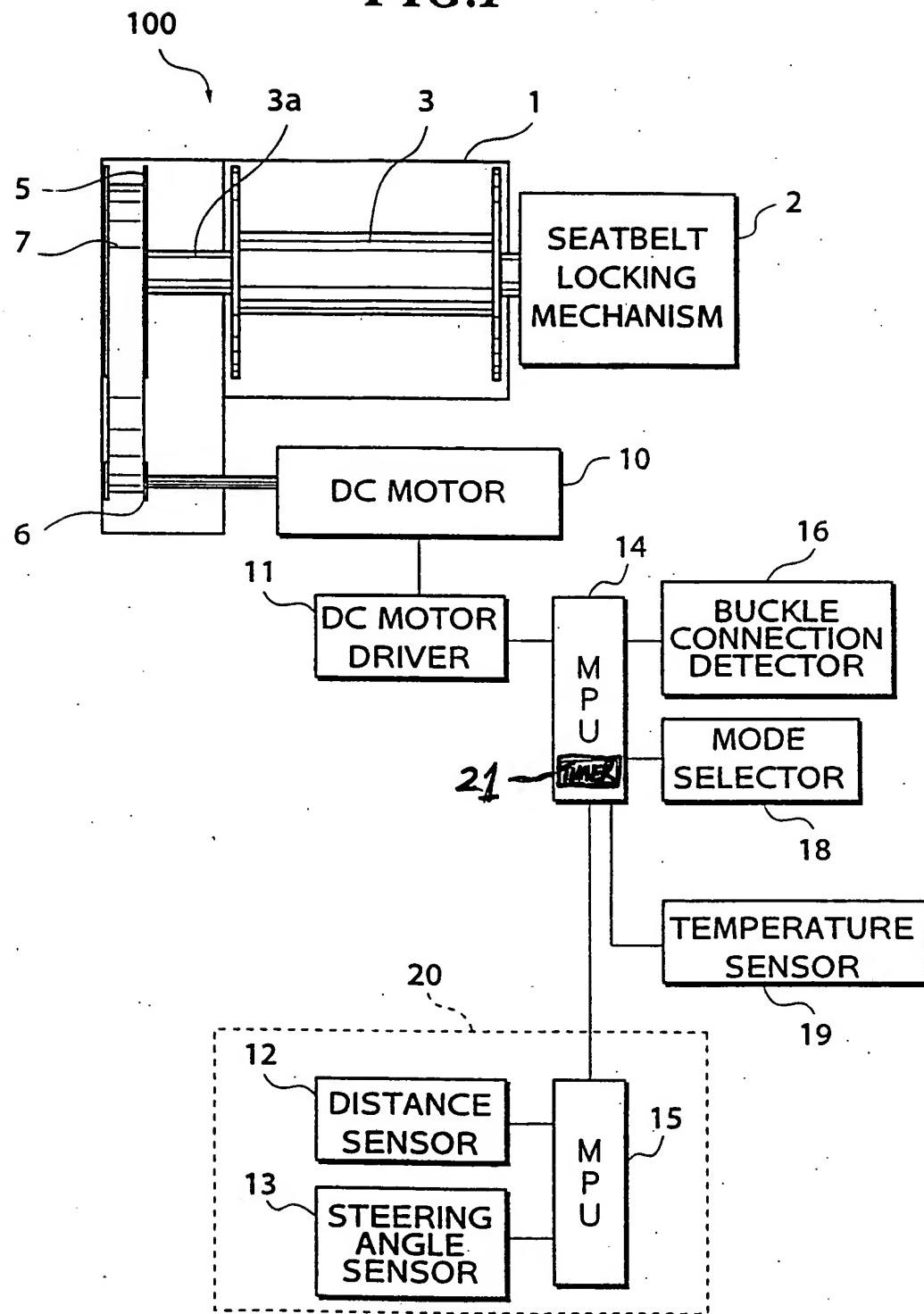
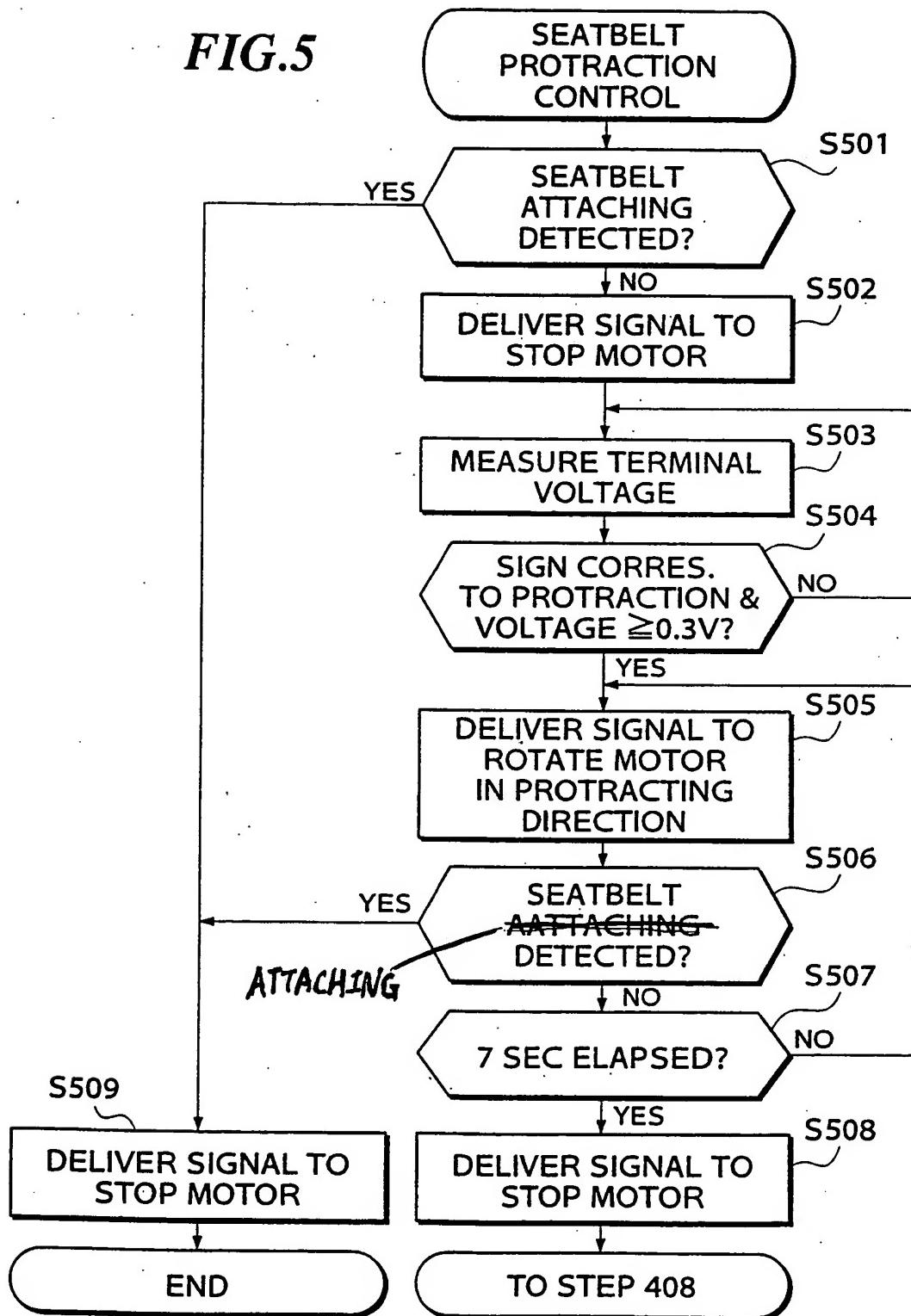
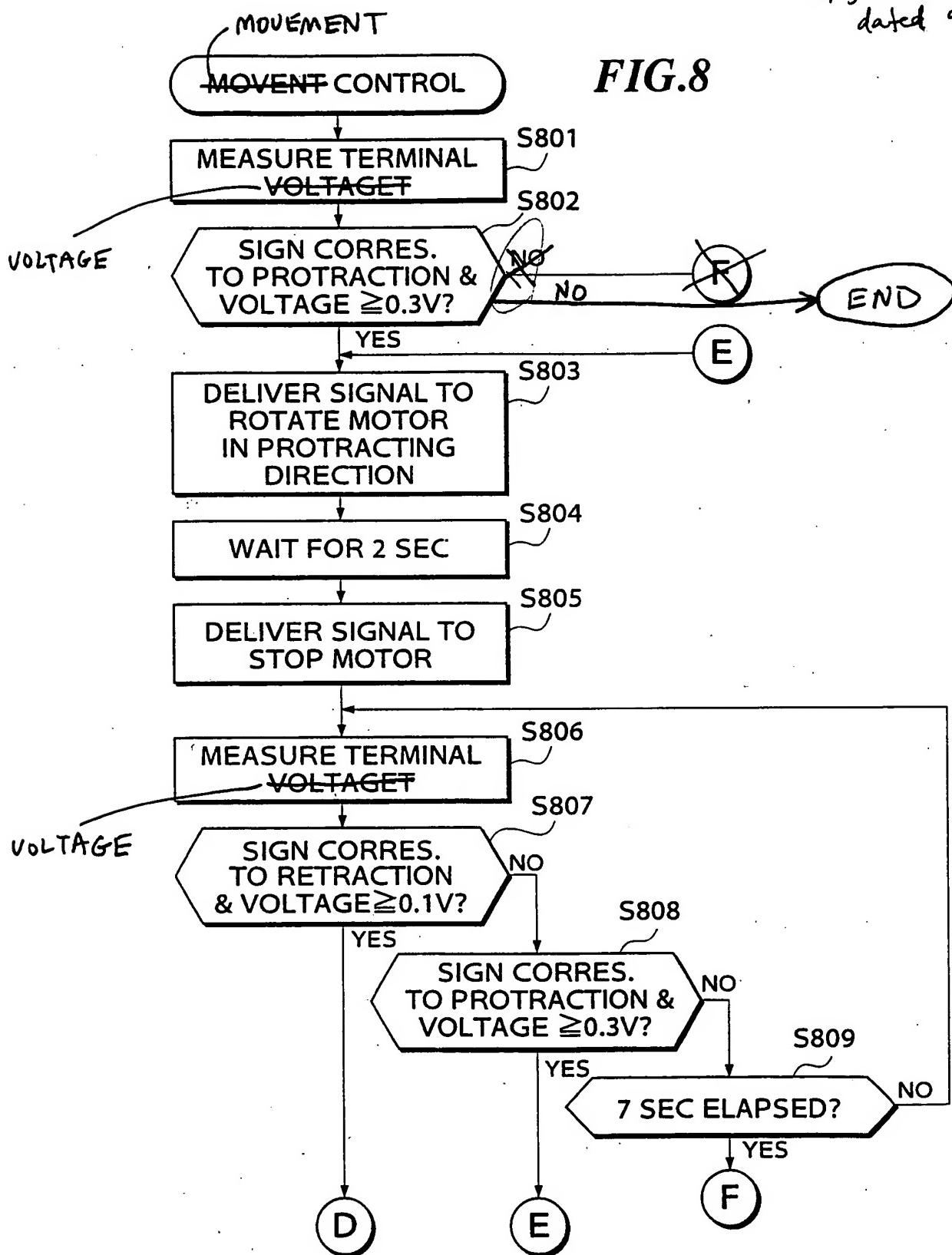


FIG.5



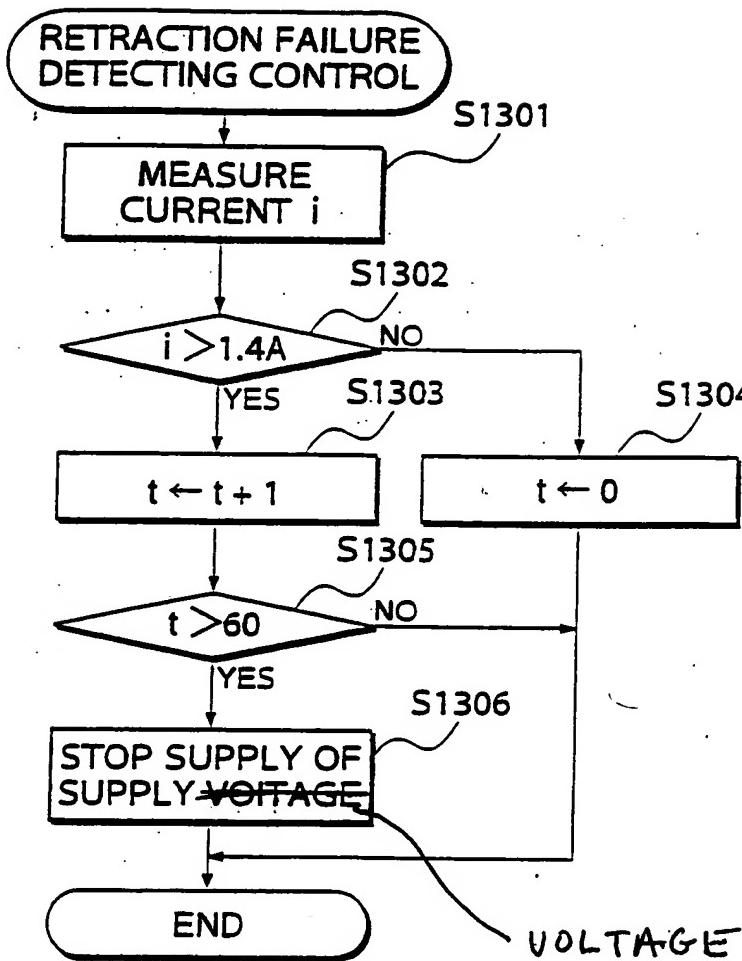
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FIG.8



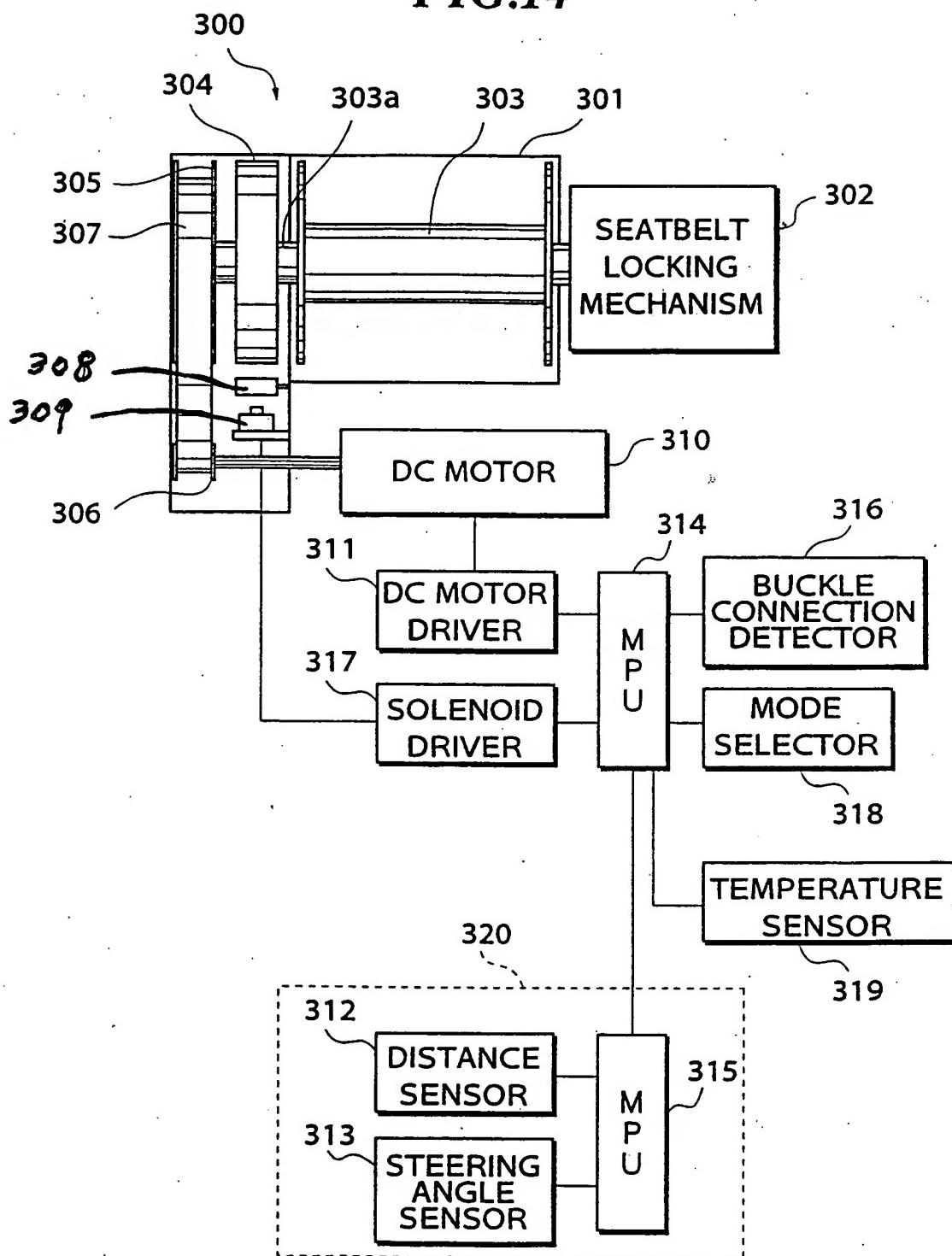
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FIG.13



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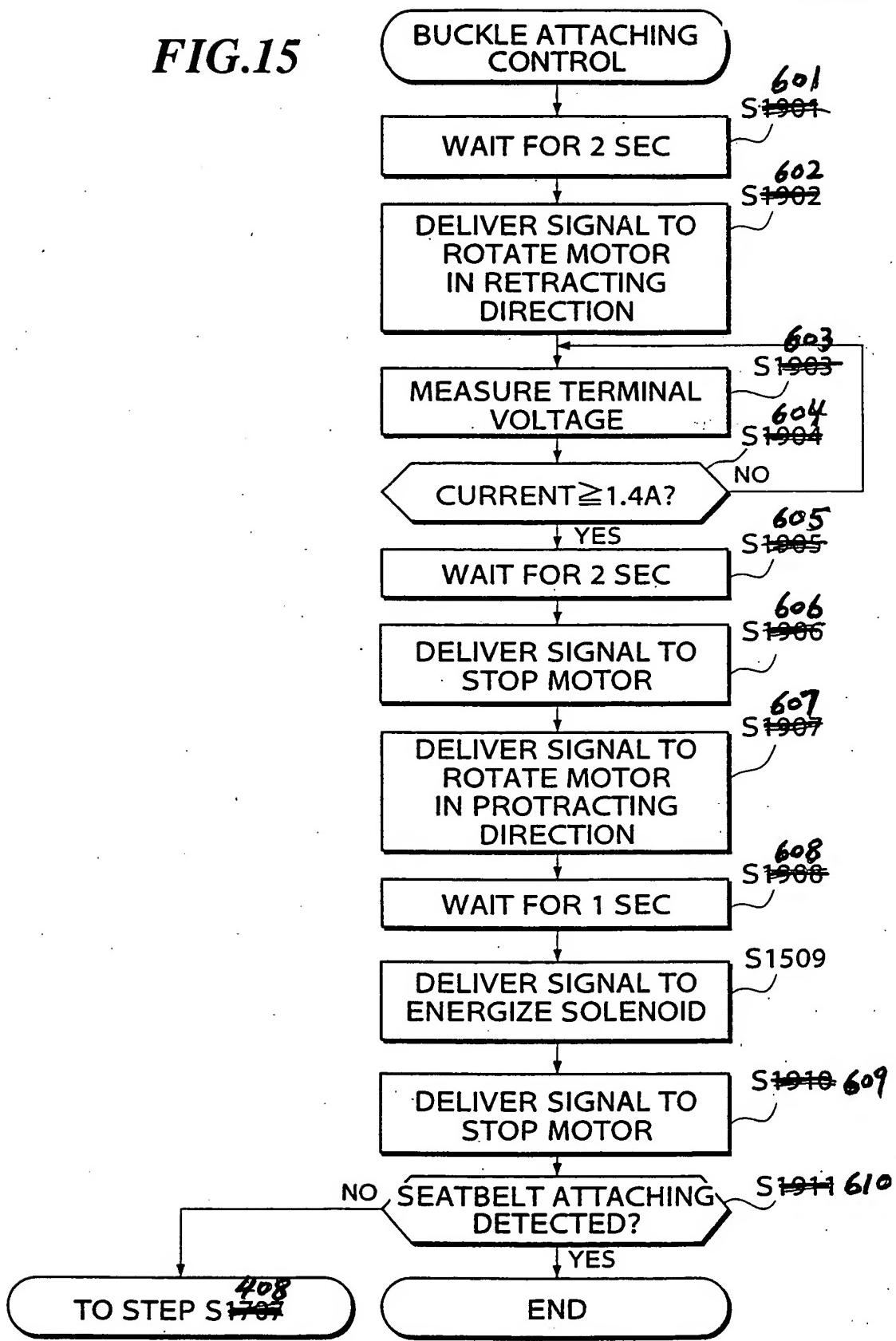
FIG.14



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FIG.15



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FIG.16

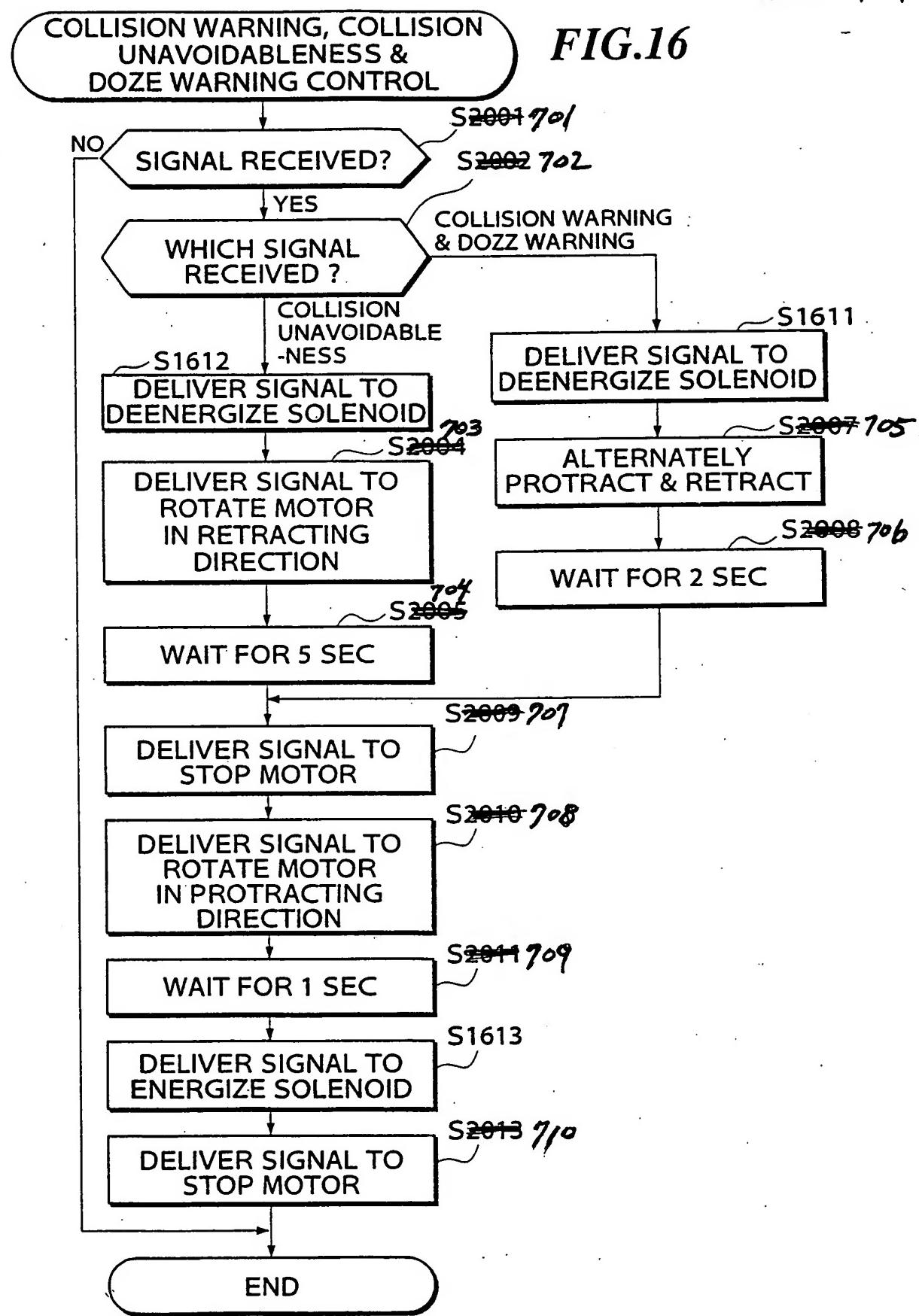
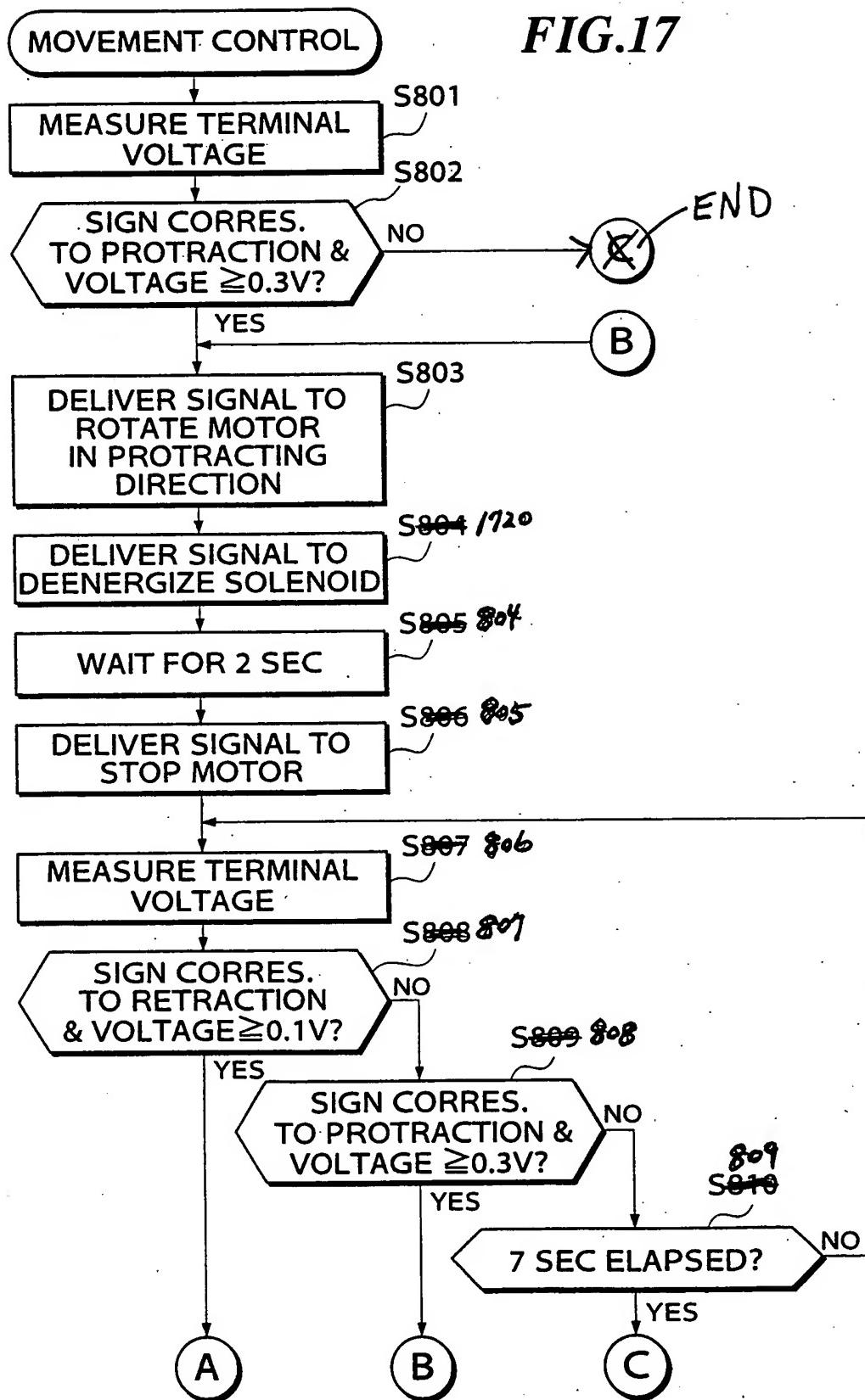
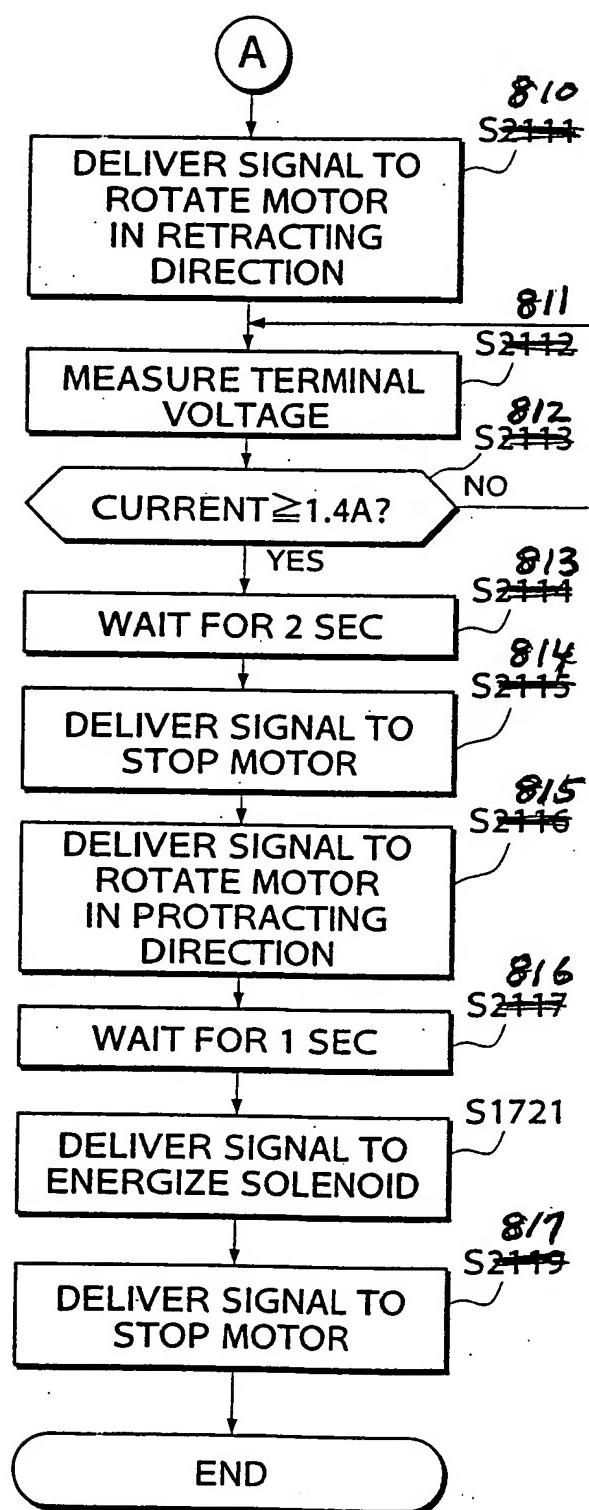


FIG.17



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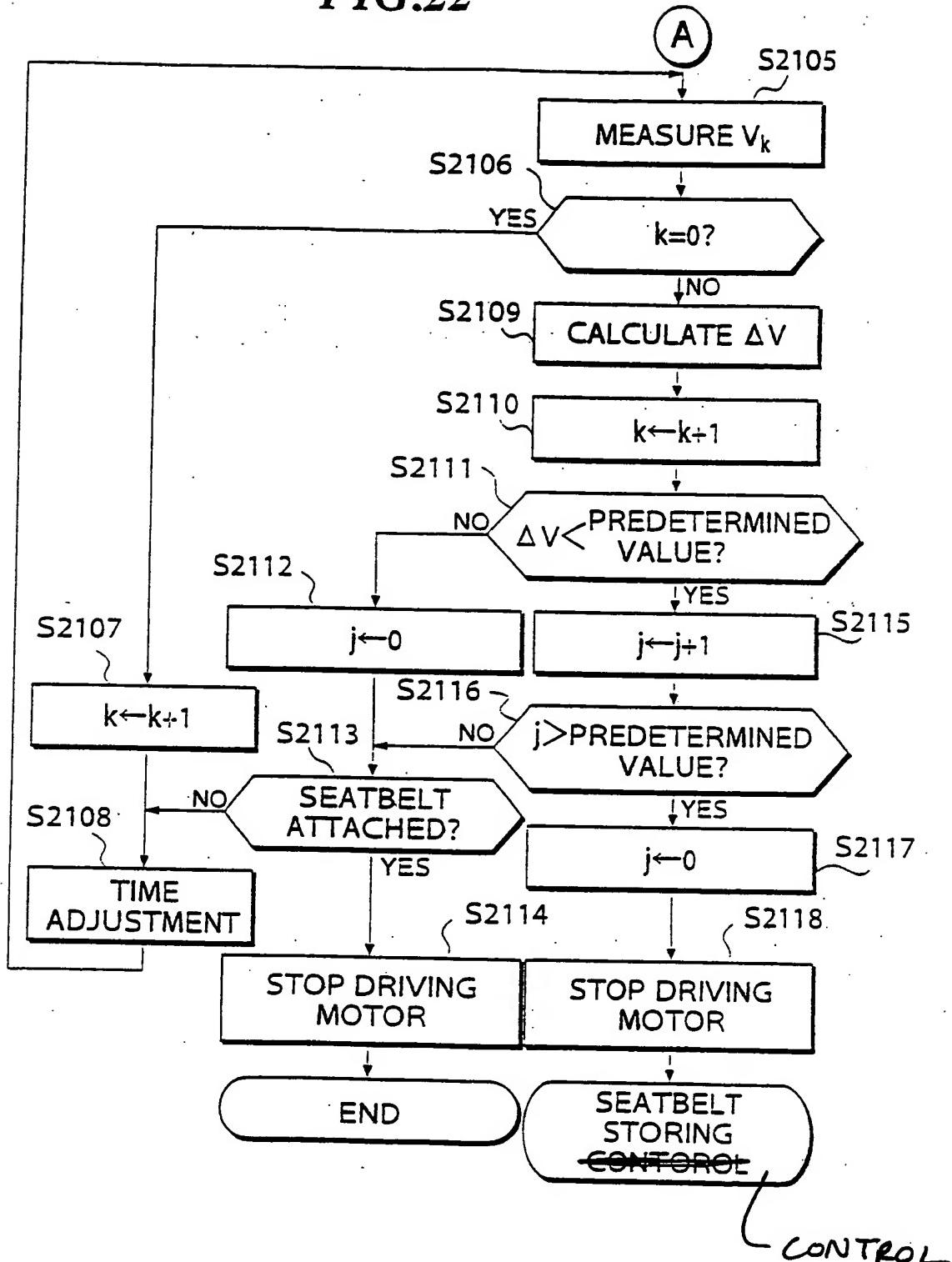
FIG.18



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FIG.22



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FIG.26

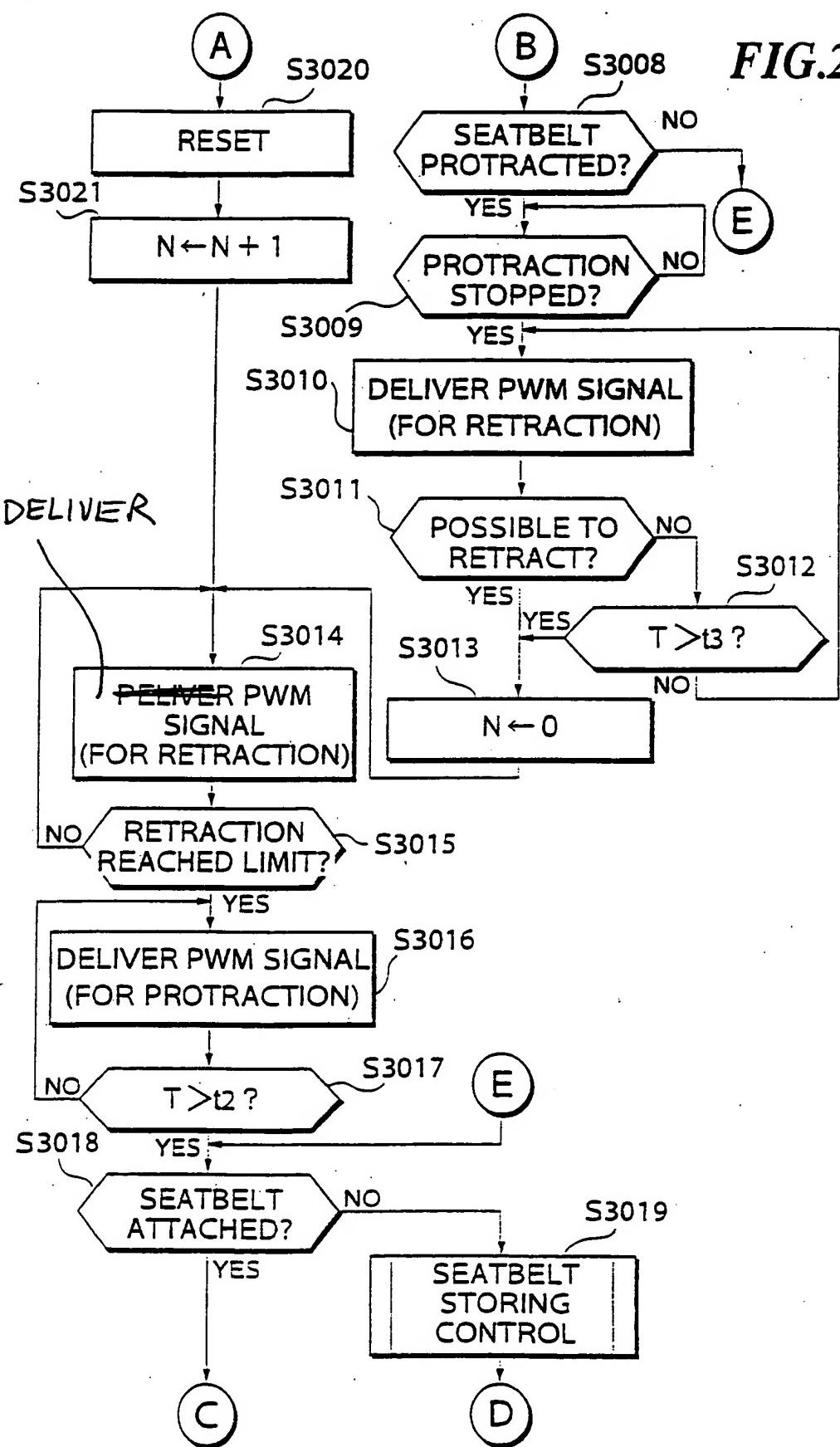
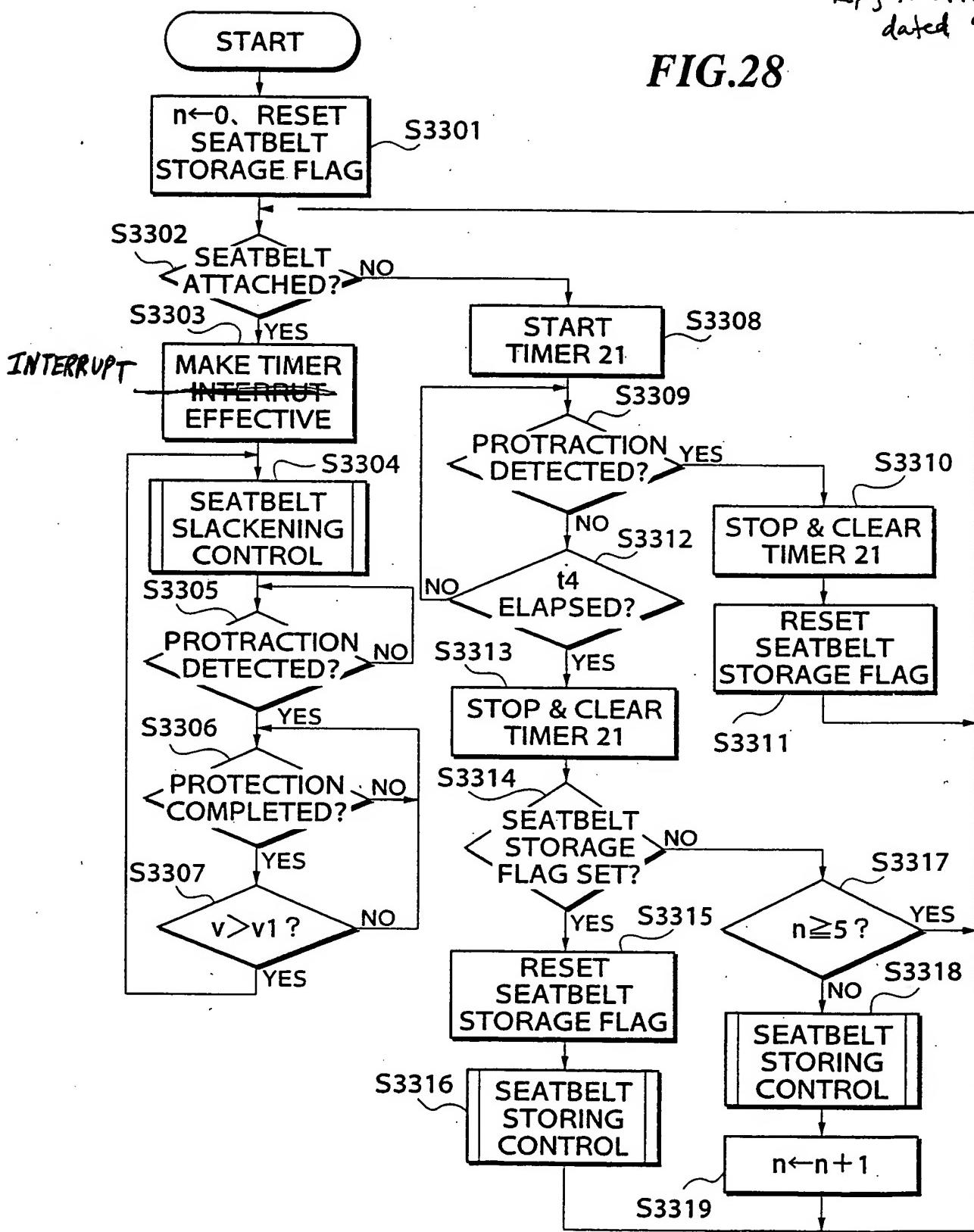


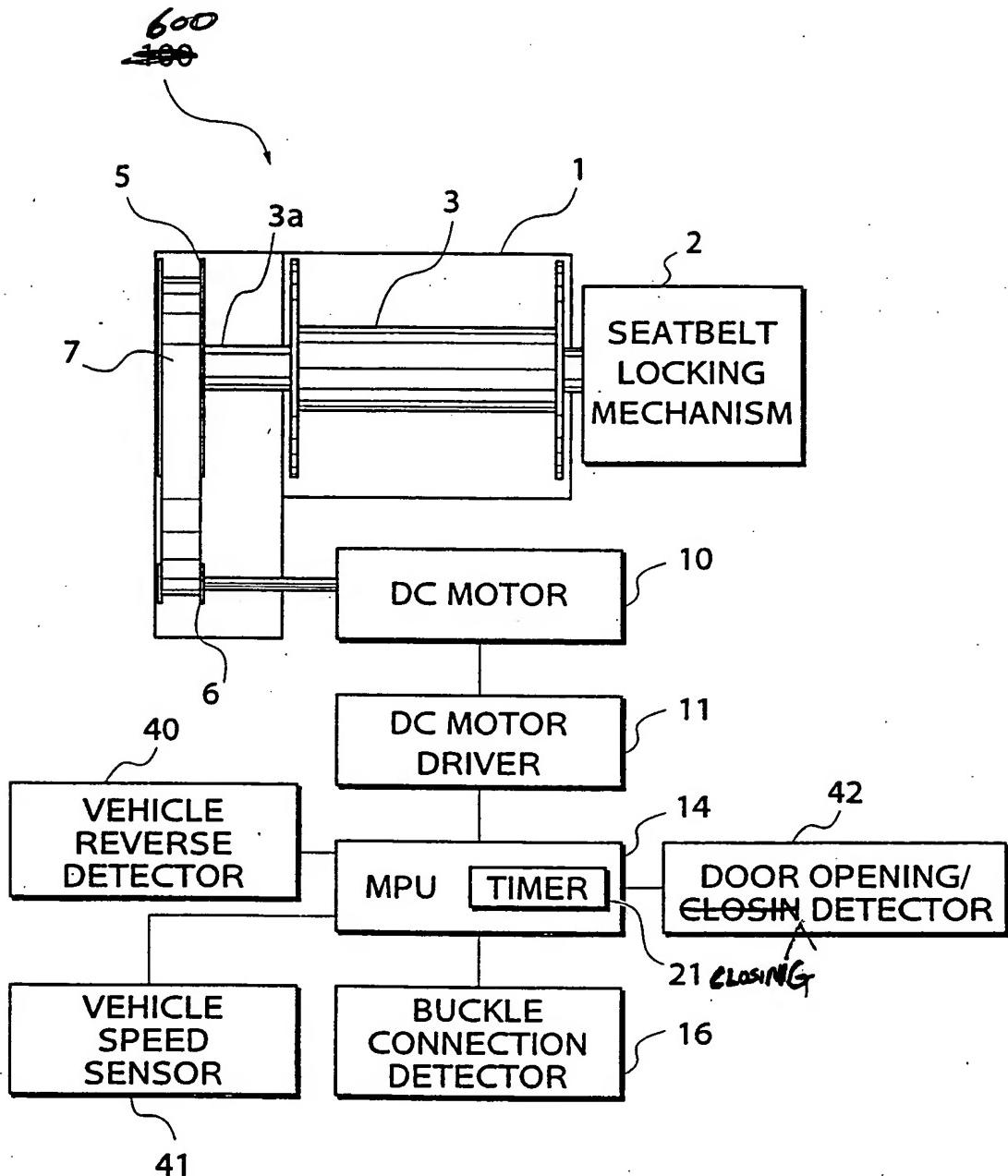
FIG. 28



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FIG.31



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FIG. 38A

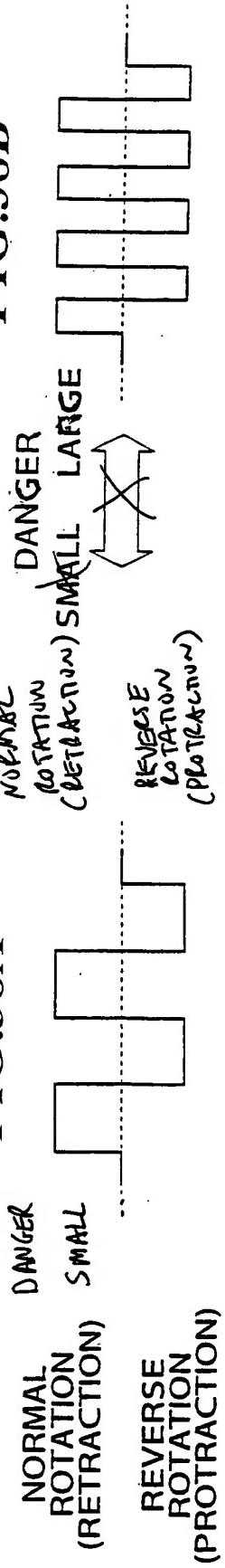


FIG. 38B

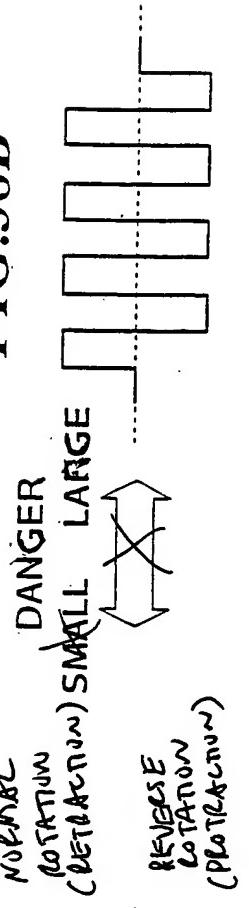


FIG. 38C

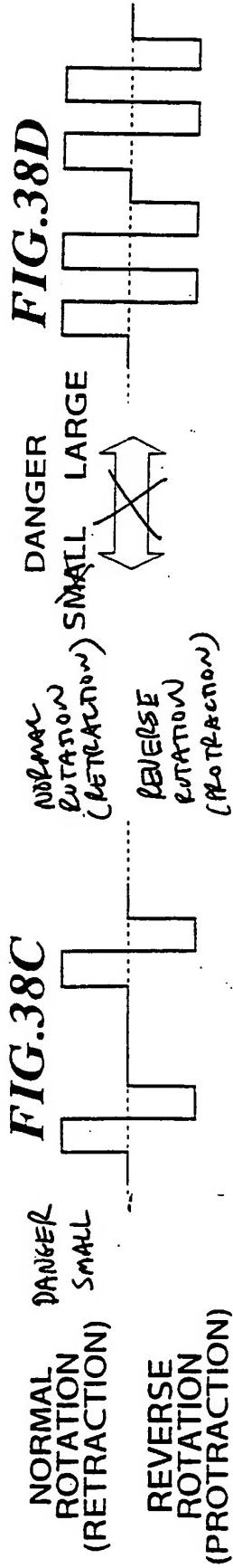


FIG. 38E

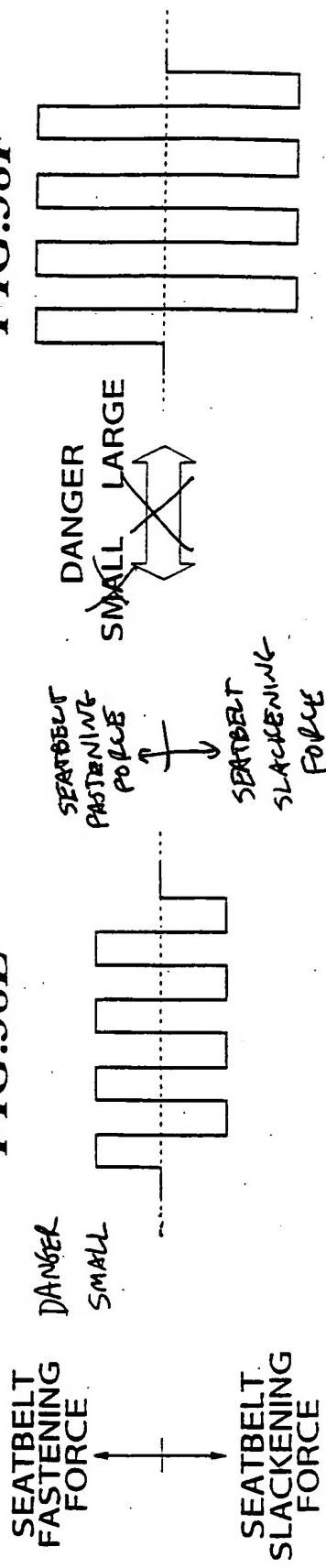


FIG. 38D

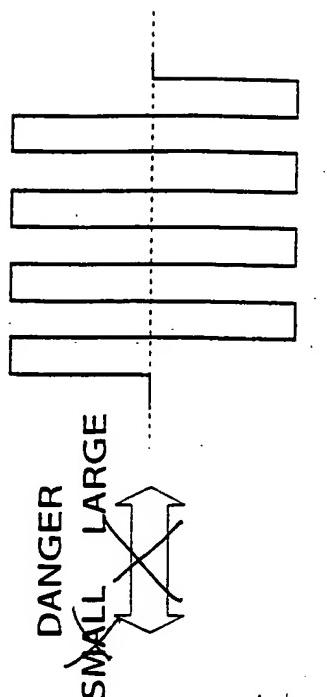
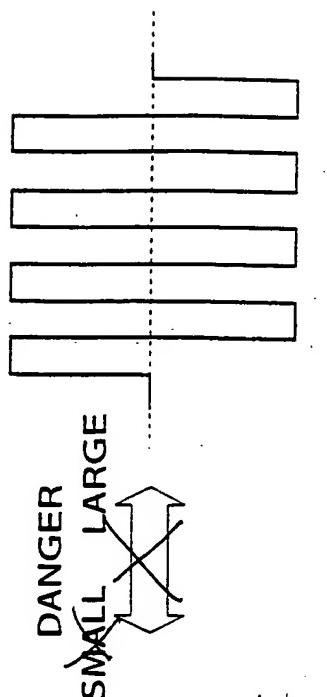


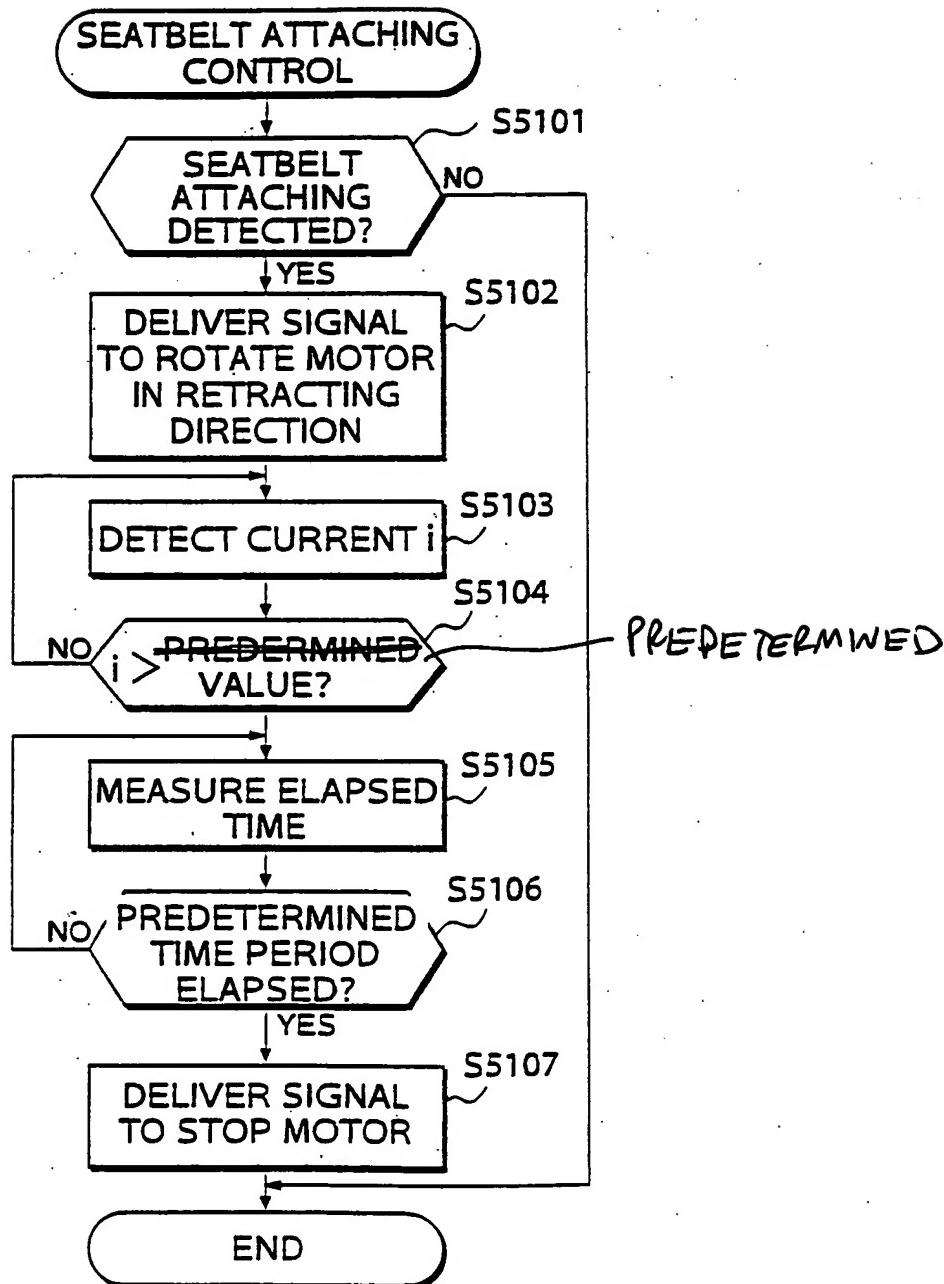
FIG. 38F



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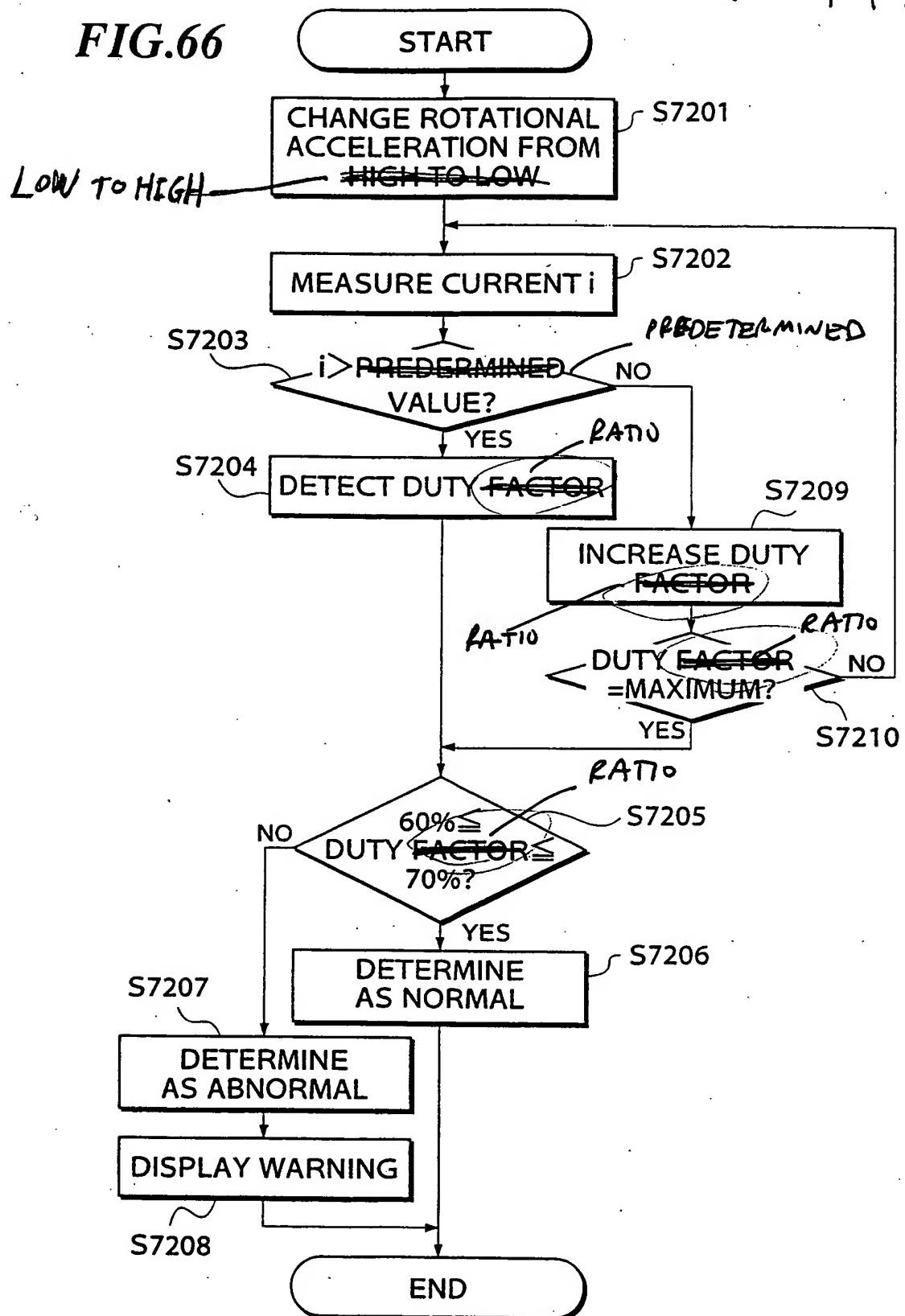
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FIG.46



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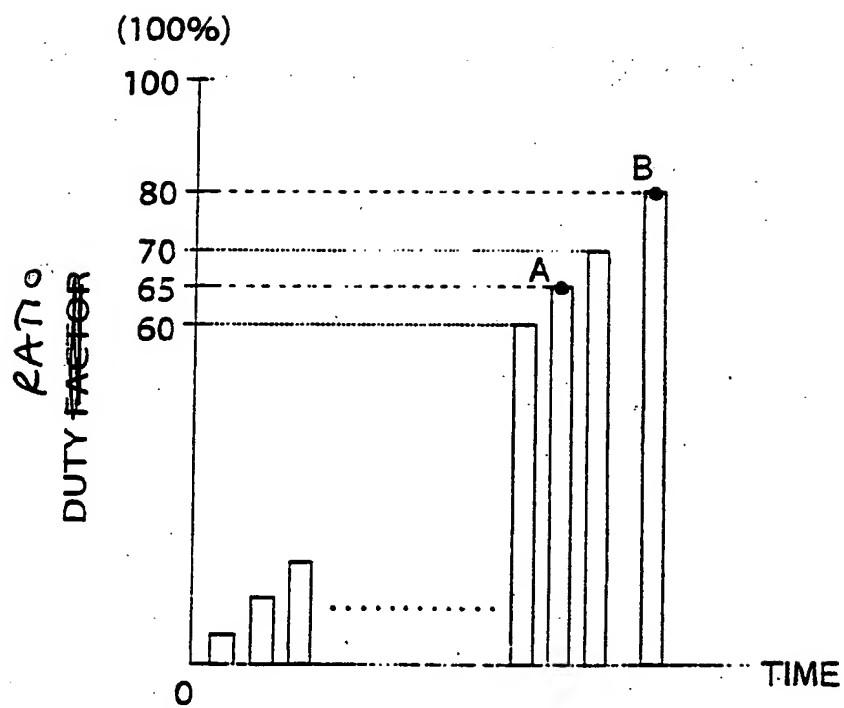
FIG.66



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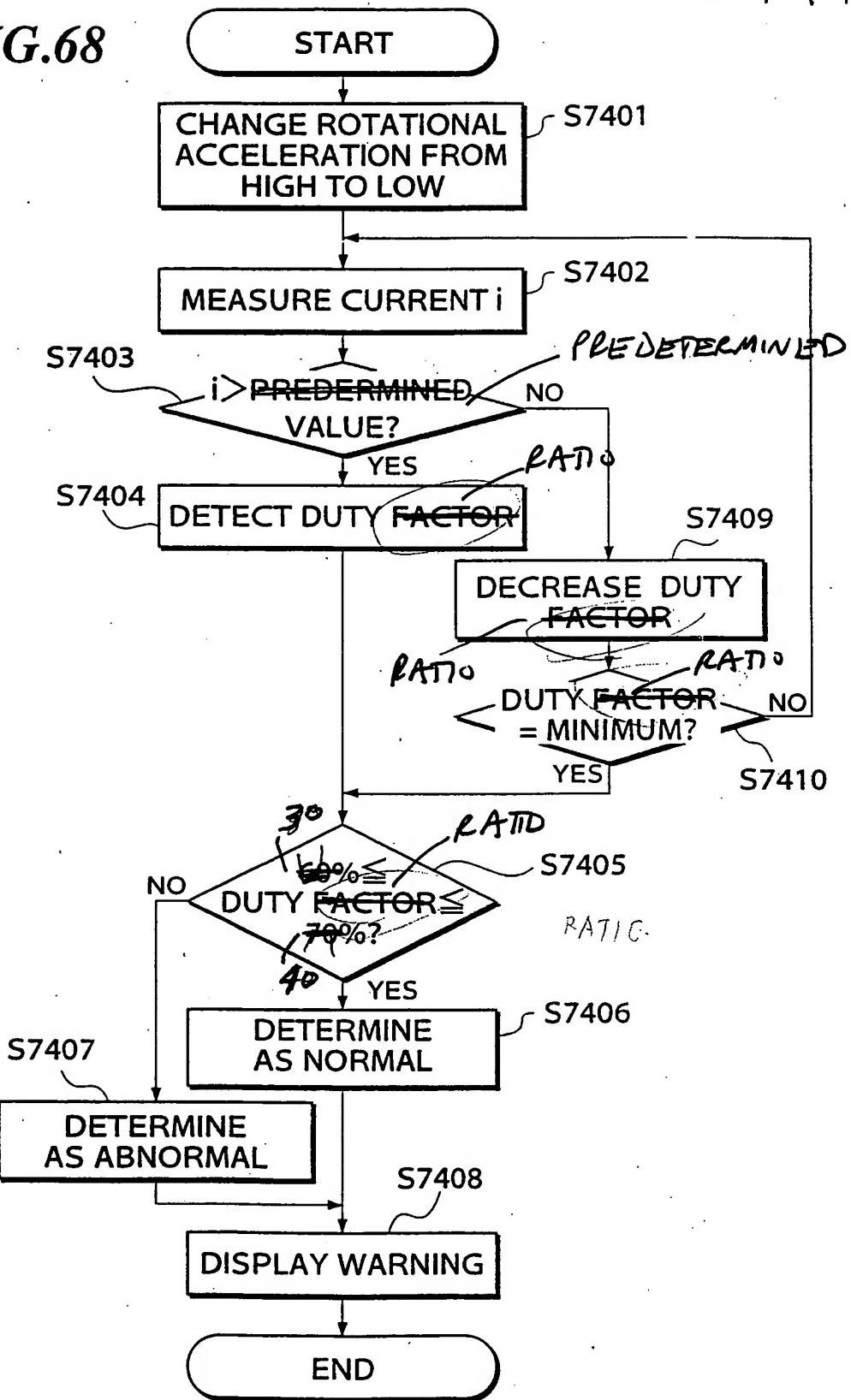
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FIG.67



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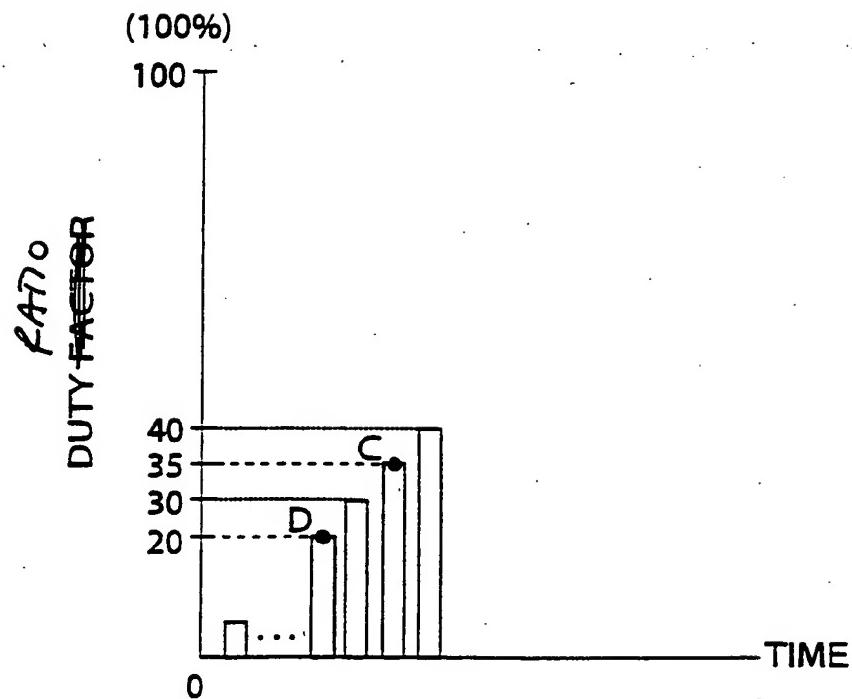
FIG.68



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FIG.69



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FIG.75

